

The few recent records compared to times past, suggests populations have declined considerably and parallels the fate of many other Australian desert mammals (Morton and Baynes 1985).

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BEHAVIOURAL MIMICRY IN THE AUTOMIZED TAIL OF A PYGOPODID LIZARD

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Although the morphology (Etheridge 1967; Arnold 1984; Bellairs and Bryant 1985) and ecology (Vitt *et al.* 1977); Vitt 1983; Arnold, 1988) of tail autotomy in lizards are thought to be indicative of a complex and highly structured adaption (Arnold 1990), the behaviour of autotomized tails is usually thought to be simple and unstructured, indeed almost random. Standard descriptions of post-autotomy tail movements are: "thrashing" (Clark 1971; Dial and Fitzpatrick 1983), "twitching" (Daniels 1983; Vitt and Cooper 1986) and "writhing" (Bellairs and Bryant 1985). The "functional significance" of this behaviour is thought to be to distract a predator's attention from the fleeing lizard (virtually all authors), but for some energy rich tails it is also thought possibly to enhance the "escape" of the tail itself so that it can later be eaten by the owner (Clark 1971). In view of this understanding of postautotomy tail behaviour, I was struck during a recent collecting trip to Western Australia, to observe the autotomized tail of a *Pygopus lepidopodus* behave in a manner previously unrecorded for any other autotomized squamate tail.

The observation was made in late spring, on 27 November 1989, at a locality approximately 21km S of Kalbarri, Western Australia, at about 1815 hrs, approximately 45 mins before sunset. I spotted a large (total length: 643mm) gravid female (Australian Museum R 134379) on the ground surface in an opening in low shrubland. In capturing the animal the distal half (218mm) of the heretofore complete tail (447mm) autotomized and began its extraordinary behaviour. This involved a co-ordinated lateral undulation over what ultimately proved to be a loop-like course of approximately 5m. The broken end, which led, was always raised slightly off the ground and was conspicuous by virtue of its splayed pink muscle bands. The dorsal side of the tail was always uppermost and when turned on its back, the tail righted itself immediately and continued undulating at a moderate but steady pace. This well co-ordinated activity lasted almost 4 minutes. After about 6-7 minutes the tail was twitching slowly but steadily in one spot and the righting reflex was evident but diminished. This co-ordinated behaviour was in strong contrast to the apparently random behaviour of the autotomized tails of other lizards, including other pygopodids (*Aprasia* spp., *Delma* spp., and *Lialis burtonis*) I have seen, where the tail simply twitches or thrashes in a seemingly very unco-ordinated manner with regard to both overall direction of movement and dorsal/ventral orientation. The reason this behaviour may not have been recorded previously in *Pygopus* is that the tail in my specimen was complete, an unusual occurrence in adult *Pygopus* (pers. obs), and the behaviour may only be a feature of complete tails.

Two questions arise from this observation. The first question is the mechanism by which the tail gains its apparent sense of balance. The only known sensory receptor for balance in vertebrates is the vestibular apparatus in the inner ear of the head. However, the behaviour reported here clearly suggests that the complete tail of *Pygopus* can sense "up" and "down" independently of the head. How it does this requires further investigation. The second question is the adaptive significance of the behaviour. The answer may be an increased chance of survival due to the mimicry of a potentially dangerous animal. The autotomized *Pygopus* tail observed here gave the distinct impression of a legless squamate undulating with head up and mouth agape, i.e., mimicking a snake-like creature behaving in a threatening manner. This behaviour could possibly act to distract a predator by causing it to concentrate on a threatening object and assess the danger before proceeding to other behaviour such as prey capture and manipulation. The addition of a threat component to the tail's generally snake-like behaviour may increase the overall distraction time.

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POLLINATION OF
HIBBERTIA CONSPICUA (DILLENIACEAE)

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ABSTRACT

Hibbertia conspicua is buzz pollinated by Anthophorid bees of the genus *Amegilla*.

INTRODUCTION

Hibbertia conspicua (J. Drumm. ex Harv.) Gilg. is an unusual member of the genus *Hibbertia* occurring on the northern margins of the wheatbelt of Western Australia. The plant is an almost leafless shrub, bearing yellow flowers with a core of anthers clustered around the style. Because of its habit and floral morphology the species has been placed in the largely tropical genus *Pachynema*, although currently it has been returned to *Hibbertia* (see Erickson *et al.* 1973, for an illustration).